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10/582,103

02/22/2007

Jean-Luc Perrin

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46507

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EXAMINER

TRIEU, THAI BA

ART UNIT

PAPER NUMBER

3748

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/582,103	<b>Applicant(s)</b> PERRIN ET AL.	
	<b>Examiner</b> THAI BA TRIEU	<b>Art Unit</b> 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 11-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/17/2008</u> .                                              | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This Office Action is in response to the Amendment filed on January 13, 2009. Applicant's cooperation in correcting the informalities in the drawing and specification is appreciated. Applicant's cooperation in amending the claims to overcome the claim objections relating to informalities as well as indefinite claim language is also appreciated.

Claims 1-10 were cancelled; and

Claims 11-20 were newly added.

### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Europe on 12/10/2003. It is noted, however, that applicant has not filed a certified copy of the foreign application as required by 35 U.S.C. 119(b).

### ***Drawings***

The Amendment to the Drawings submitted on January 13, 2009 is accepted.

### ***Specification***

The Amendment to the Specification submitted on January 13, 2009 is approved for entry.

However, on page 1, lines 7-12 of the specification, there is an error which applicants have to address.

In the instant application, Applicants disclose that:

“The International Patent Application PCT/IB03/00042 discloses a parallel configuration of turbochargers (101, 102), both turbines (T, T) thereof are connected in parallel **according to Fig. 11**. At low rotational speeds, the second turbocharger is not operated. This configuration needs **an external control valve (100)** for fully closing the turbine of the second turbocharger at low rotational speeds. At high rotational speeds, the valve must be opened to operate the second turbocharger. “

First of all, **Figure 11** of the International Patent Application PCT/IB03/00042 describes **an enlarged cross-sectional view of an actuation mechanism**.

Secondly, **Figure 4** of the International Patent Application PCT/IB03/00042 shows **a parallel configuration of turbochargers (601, 602), both turbines (605, 607) thereof are connected in parallel**.

Thirdly, **Figure 4** of the International Patent Application PCT/IB03/00042 also shows **two external valves (629, 633)**.

Finally, the butterfly valve **633** is closed or nearly closed to reduce exhaust gas flow into turbine 607 to ensure an idling rotation of the second turbocharger (602).

Accordingly, applicants are required to clarify the Figure 11 and an external control valve (100), or to revise this paragraph on page 1 of the instant application.

### ***Claim Suggestions***

Applicants are suggested to revise:

Claim 17 as an independent claim including all the limitation of claim 11;

Claim 18 as an independent claim including all the limitation of claim 11;

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Claim 19 as an independent claim including all the limitation of claims 11 and 14;  
and

Claim 20 as an independent claim including all the limitation of claim 11.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 11-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrin et al. (Pub. Number WO 02/44527 A1 or US 7,024,855 B2), in view of Bandukwalla (Patent Number 4,378,194).***

Perrin discloses a turbocharger (10) having a variable nozzle device, comprising:

a compressor (16, 22) and an exhaust gas-driven turbine (12, 18), the turbine (12) comprising a turbine wheel (18) disposed within a turbine housing (12), the turbine housing (12) receiving exhaust gas from an engine, the turbine having an annular nozzle (Not Numbered) defined between an inboard wall (92) and an outboard wall (end of 86) for guiding the exhaust gas to the turbine wheel (18), wherein the annular nozzle comprises a variable nozzle device comprising:

a plurality of vanes (90) mounted on the inboard wall (92) and extending into the annular nozzle, the inboard wall (92) and the vanes (90)

being fixed (See Figure 1 Page 5, lines 7-8 of '527; Figure 1 Column 3, lines 7 of '855);

an axially movable, tube-shaped piston (70) disposed within the turbine housing (12) and having a piston end (86) that forms the outboard wall of the annular nozzle such that the outboard wall is axially movable for varying an axial width of the annular nozzle (See Figure 1 of '527 and '855);

wherein the annular nozzle has a maximum axial width when the piston is in the fully open position, and the vanes extend over only a part of the maximum axial width (See Figures 1-2 of '527 and '855);

wherein the inboard wall (92) is formed by a vaned shroud having the vanes (See Figures 1-2 of '527 and '855);

wherein the turbine housing (12) and the piston (70) are configured such that the fully open position of the piston allows some of the exhaust gas flowing through the annular nozzle to bypass the turbine wheel (18) (See Figures 1-2 of '527 and '855).

However, Perrin fails to disclose the shape of the piston end; and the first portion of the piston end passing along the radial inside of the vanes.

Bandukwalla teaches that it is conventional in the art of the centrifugal compressor, to utilize the piston end (54) being stepped such that an annular first portion of the piston end extends axially farther toward the inboard wall (22) than does a second portion of the piston end, the piston being axially movable in one direction into a

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fully closed position in which the first portion of the piston end passes along the radial outside or inside of the vanes (52) and contacts the inboard wall (22) so as to completely close the annular nozzle, and being axially movable in an opposite direction into partially open and fully open positions in which the first portion of the piston end is spaced from the inboard wall;

wherein the first portion of the piston end (54) passes along the radial inside of the vanes (52) (See Figures 1-2).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the shape of the piston end; and the first portion of the piston end passing along the radial inside of the vanes, as taught by Bandukwalla, to improve the efficiency of Perrin device, since the use thereof would have optimized over a wide range flow rates through the diffuser/nozzle.

Alternatively, the substitution of the stepped piston with a first portion passing along the radial inside of the vanes as shown in Bandukwalla for the piston shown in Perrin would have been obvious to one of ordinary skill in the art at the time of the invention since the substitution of the stepped piston with a first portion passing along the radial inside of the vanes shown in Bandukwalla would have yielded predictable results of optimized over a wide range flow rates through the diffuser/nozzle. *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1395 (U.S. 2007)

***Claims 17-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganz (Pub. Number DE 19835594 A1), Perrin et al. (Pub. Number WO 02/44527 A1 or US 7,024,855 B2), and further in view of Bandukwalla (Patent Number 4,378,194).***

Ganz discloses an engine boosting system comprising a parallel configuration of at least a first and a second turbocharger (2a, 2b) arranged in parallel with respect to an internal combustion engine, wherein the second turbocharger comprises the turbocharger having a variable nozzle device;

control means (19) for closing the turbine annular nozzle (within turbine housing) to an optimum position for engine braking by causing a high back pressure upstream of the turbine of the turbocharger (See Figure and Abstract);

wherein the variable nozzle device of the second turbocharger (2a, 2b) completely closes its nozzle opening when said second turbocharger (2a, 2b) is driven under low rotational speed of the engine.

However, Ganz fails to disclose the structural details of a variable nozzle device being disclosed in claim 11.

Perrin teaches that it is conventional in the turbocharger art, to have a variable nozzle device, comprising:

a compressor (16, 22) and an exhaust gas-driven turbine (12, 18), the turbine (12) comprising a turbine wheel (18) disposed within a turbine housing (12), the turbine housing (12) receiving exhaust gas from an engine, the turbine having an annular nozzle (Not Numbered) defined between an inboard wall (92)



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and an outboard wall (end of 86) for guiding the exhaust gas to the turbine wheel (18), wherein the annular nozzle comprises a variable nozzle device comprising:

a plurality of vanes (90) mounted on the inboard wall (92) and extending into the annular nozzle, the inboard wall (92) and the vanes (90) being fixed (See Figure 1 Page 5, lines 7-8 of '527; Figure 1 Column 3, lines 7 of '855);

an axially movable, tube-shaped piston (70) disposed within the turbine housing (12) and having a piston end (86) that forms the outboard wall of the annular nozzle such that the outboard wall is axially movable for varying an axial width of the annular nozzle (See Figure 1 of '527 and '855);

wherein the annular nozzle has a maximum axial width when the piston is in the fully open position, and the vanes extend over only a part of the maximum axial width (See Figures 1-2 of '527 and '855);

wherein the inboard wall (92) is formed by a vaned shroud having the vanes (See Figures 1-2 of '527 and '855);

wherein the turbine housing (12) and the piston (70) are configured such that the fully open position of the piston allows some of the exhaust gas flowing through the annular nozzle to bypass the turbine wheel (18) (See Figures 1-2 of '527 and '855).

Additionally, Bandukwalla teaches that it is conventional in the art of the centrifugal compressor, to utilize the piston end (54) being stepped such that an annular

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first portion of the piston end extends axially farther toward the inboard wall (22) than does a second portion of the piston end, the piston being axially movable in one direction into a fully closed position in which the first portion of the piston end passes along the radial outside or inside of the vanes (52) and contacts the inboard wall (22) so as to completely close the annular nozzle, and being axially movable in an opposite direction into partially open and fully open positions in which the first portion of the piston end is spaced from the inboard wall;

wherein the first portion of the piston end (54) passes along the radial inside of the vanes (52) (See Figures 1-2).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the structural details of a variable nozzle device, as taught by Perrin; and the shape of the piston end; and the first portion of the piston end passing along the radial inside of the vanes, as taught by Bandukwalla, to improve the efficiency of the Ganz engine boosting system/the turbocharged internal combustion engine, since the use thereof would have provided an alternative arrangement/design for controlling and optimizing exhaust gas over a wide range flow rates through the diffuser/nozzle; and then, when the engine receives desired boost air depending upon such controlled exhaust gas, the engine system can perform at a desired condition.

Note that the limitation “to an optimum position for engine braking by causing a high back pressure upstream of the turbine of the turbocharger” is an intended use recitation. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to

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patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, and then it meets the claim. In a claim drawn to process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCCPA 1963).

The recitation of “to an optimum position for engine braking by causing a high back pressure upstream of the turbine of the turbocharger” is considered as the functional language. The modified Ganz discloses all the structural components of an engine system, which are read on those of the instant invention. Therefore, the modified Ganz system is capable of performing the same desired functions as the instant invention of optimizing the engine brake condition, and the variable nozzle device of the second turbocharger completely closing its nozzle opening when said second turbocharger being driven under low rotational speed of the engine, which have been claimed in claims 17-18.

**Regarding claim 20**, the method as claimed would be inherent during the normal use and operation of the modified Perrin device as disclosed in the rejection above of claim 17.

***Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perrin et al. (Pub. Number WO 02/44527 A1 or US 7,024,855 B2), in view of***

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***Bandukwalla (Patent Number 4,378,194), and further in view of Sasaki et al. (Patent Number 6,804,952 B2).***

The modified Perrin device discloses the invention as recited above; however fails to disclose catalyst disposed downstream of the turbocharger and to open the variable nozzle device at a start of the engine.

Sasaki discloses an engine boosting system comprising a turbocharger (2,0) and a catalyst (40) disposed downstream of said turbocharger (20), wherein the engine boosting system is operable to open the variable nozzle device (26) at a start of the engine so as to cause exhaust gas to bypass the turbine wheel and heat up the catalyst (See Figures 1 and 15, Column 13, lines 42-52).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have positioned catalyst disposed downstream of the turbocharger and to opened the variable nozzle device at a start of the engine, as taught by Sasaki, to improve the efficiency of the modified Perrin device, since the use thereof would have reduced the exhaust emissions.

### ***Allowable Subject Matter***

Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments with respect to claims 11-20 have been considered but are moot in view of the new ground(s) of rejection.

***Prior Art***

The IDS (PTO-1449) filed on December 17, 2008 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THAI BA TRIEU whose telephone number is (571)272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTB  
February 25, 2009

/Thai-Ba Trieu/  
Primary Examiner  
Art Unit 3748